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ABSTRACT

Divided into two phases, a study investigated the differential effects of text with and without logical connectives on college developmental readers' comprehension. In the first phase, 44 sophomores from two sections of a college developmental reading course were administered a cloze comprehension exercise along with a class of 50 regular education students (the control group) to assess their existing knowledge of connectives. Results showed that the control group significantly outperformed both developmental reading groups, who performed similarly. These results verified that the developmental readers had limited knowledge of the role of linguistic connectives in understanding connected discourse. In the second phase, a group of developmental readers (Group 1) read a passage that had intra- and inter-sequential connectives, while another group (Group 2) read the same passage without connectives. Both groups then completed a multiple choice questionnaire. Results supported the hypothesis that readers receiving the connected text would better understand how ideas were linked together, resulting in superior performance on the questions requiring inferencing ability. Findings indicated that Group 1 outperformed Group 2 on the comprehension test. Both groups performed similarly on the explicit questions, but Group 2 answered correctly significantly more questions requiring inferencing. (JD)

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UNSKILLED COLLEGE READERS' COMPREHENSION OF CONNECTED AND DISCONNECTED TEXT

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Summary. This manuscript describes a study designed to determine the differential effects of text with and without logical connectives on developmental college readers' comprehension. Results strongly suggest that text with explicit connectives facilitates readers' abilities to make inferences. Implications for instruction in college reading classes are discussed.

Unskilled College Readers' Comprehension
of Connected and Disconnected Text

Over the past two decades researchers have been documenting the relationship between students' awareness of the role of linguistic connectives in text and reading comprehension (Bridge & Winograd, 1982; Bormuth, Carr, Manning & Pearson, 1970; Geva & Ryan, 1985; Katz & Brent, 1968; Marshall & Glock, 1978-1979; Robertson, 1968; Stoodt, 1970). A linguistic connective can be defined as a syntactic structure that signals underlying logico-semantic relations and links propositions within or between sentences as a single word or phrase (Walmsley, 1977). Readers prefer texts that explicitly describe causal relations by the use of connectives (Beilin & Lust, 1975; Chomsky, 1969; Yopp & Singer, 1984). Yet, according to Anderson and Armbruster (1984), many content textbooks lack the connecting words and structures which explicate relationships among propositions and contribute to a smooth flow of meaning from one idea to the next.

Mature readers are apparently able to surmount problems posed by an incohesive surface structure by bridging ideas inferentially--inserting connectives where the author has failed to provide them. This ability to supply missing links in text has been correlated with deeper understanding of the material (Johnston, 1981). Less able readers, on the other hand, do not understand the role of connectives in discourse and, consequently, have much more difficulty comprehending text that does not contain explicit ties (Marhall & Glock, 1979).

In light of what we have learned about the role of linguistic connectives in text processing, the authors designed a study to determine the differential effects of connected and disconnected text on comprehension of low-ability college readers. The authors were surprised to discover after an extensive review of the literature that virtually no studies of this kind had been conducted. It seemed important to determine whether connected text facilitates deeper levels of understanding for poor readers. If this were found, then teachers of college developmental and remedial reading would have good reason to incorporate instruction on linguistic connectives into their classrooms.

Assessing Readers' Understanding of Connectives

A total of 44 sophomores from two sections of a college developmental reading course offered at a large Midwestern university participated in the study. The mean Nelson-Denny Reading Test score for these students was 64.27 out of a total of 172. The two groups' were undifferentiated in their ability to read according to their Nelson-Denny scores (Group 1 = 65.11; Group 2 = 64.54). In comparison, a similar group of 200 regular education students obtained an average score of 123.88.

Early in the spring semester of 1986, both groups of developmental students and 50 regular education students randomly selected from the group mentioned above were administered a cloze comprehension exercise to assess their existing knowledge of

connectives. The exercise required students to fill in the blanks of a passage on robotics (Raygor Readability Estimate = college level) containing 25 missing connectives. All students were provided a brief explanation of connectives and shown a couple of examples before they were asked to read and complete the cloze passage. In addition, students were given an extensive list of connectives to refer to for this activity. All responses were scored separately by the authors and by an additional faculty member in reading. Responses were counted as correct if they were exact replacements or if they logically connected propositions. Our scores were similar 94% of the time, and the few disagreements were reconciled through discussion.

The results, presented in Table 1, show that the two groups of developmental readers were not significantly different; however, the group of regular education students significantly outperformed the other two groups. These results verified that the developmental subjects had limited knowledge of the role of linguistic connectives in understanding connected discourse since they were unable to connect the cloze passage inferentially.

Insert Table 1 about here

The next phase of the study involved comparing the two

groups of developmental readers on variable text. Group 1 received the passage, "The Battle of Bindu Creek," (Raygor Readability Estimate = 12th grade; approximately 1,000 words in length) with intra- and inter-sentential connectives included; while Group 2 received the same passage but without the connectives. The passage was developed by Peter Johnston (1981) who adapted this make-believe confrontation between two ficitonalized armies from an account of a famous Civil War battle that took place at Antietam Creek, Virginia. By assigning fictionalized names to the prinicpals of that battle (for instance, "Chief Togo" for General Robert E. Lee) and altering other possible connections to the Civil War (i.e., "East" for North and "West" for South) the potential contaminating effects of prior knowledge on the results of the study were virtually eliminated.

Students were asked to read the passage and answer 26 multiple choice questions. The questions were representative of two categories of Pearson and Johnson's (1978) taxonomy of question-answer relations: text explicit(TE)--an item sampling understanding of directly stated information; and text implicit(TI)--an item sampling understanding of the relationships among ideas. The authors hypothesized that while both groups might not be differentiated in their performance on explicit questions (TE), readers receiving the connected text would better understand how ideas were linked together resulting

in superior performance on the questions that require inferencing (TI).

Connected and Disconnected Text Formats

Connected Text

Chiefs almost never split up their tribe in the face of the enemy because each part is small and weak by itself. So the order must have seemed unusual to Obu, since he was by nature a suspicious man. As a result he must have thought that Togo was trying to trick him.

Disconnected Text

Chiefs almost never split up their tribe in the face of the enemy. Each part is small and weak by itself. The order must have seemed unusual to Obu. Obu was by nature a suspicious man. He must have thought that Togo was trying to trick him.

Connected Text is Easier to Comprehend

Table 2 summarizes the results for both groups on the comprehension test over "The Battle of Bindu Creek." These results support our hypotheses. Group 1 apparently was able to

read the connected text with greater understanding than students in Group 2, who read the disconnected text, as evidenced by their performance on the comprehension test. Both groups were similar in their performance on TE questions; however, Group 1 answered correctly significantly more TI items.

Insert Table 2 about here

Implications for College Reading Specialists

The results of this study are consistent with findings from past research on the relationship between students' understanding of linguistic conectives and their reading comprehension. First, we found that superior college readers could supply more appropriate connectives in a cloze passage than poor college readers; this supports what we have known for some time. An exciting result, however, is the finding that poor college readers could take advantage of connected text to further their comprehension.

These findings seem to suggest that textbook readability could be improved through the use of more logical connectives. When a text is written in such a way that explicit ties linking together the ideas are omitted, it places a greater demand on readers to make inferences increasing the likelihood that the author's message will be misconstrued (Anderson & Armbruster,

1984; Jones, 1985). Unfortunately, many textbook publishers continue to adhere strictly to formulae for decisions about readability (Davison, 1984; Kintsch, 1984). So connectives often may be forsaken because they tend to increase the grammatical complexity of a sentence, thus raising the readability level (Pearson & Camperell, 1981).

A more feasible approach to improving poor readers' comprehension of their textbooks is for the college reading specialist to provide systematic instruction in recongizing and manipulating connectives. We were surprised to find very little in existing secondary and college-level methods textbooks, and reading/study skills manuals for promoting this understanding, in spite of the fact that practitioners have been admonished to aid students in developing knowledge of connectives in exposition (Pearson & Camperell, 1981). The methods discussed by Brozo (1986a; 1986b) which require students to generate content-based propositions and then join them with appropriate connectives, or supply missing connectives for cloze passages taken directly from the students' own textbooks would appear promising.

The poor college readers in our study who scored well on inferential comprehension questions received virtually no instruction on how to use connectives in understanding or generating text, other than the necessary explanation for completing the study exercises. We have every reason to believe that with sound instructional strategies, college developmental

and remedial readers can be taught to recognize text that is disjointed and use their knowledge about connectives to link ideas and improve understanding.

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Table 1

Means and Standard Deviations for Three Groups

on Prior Knowledge of Connectives Test

Group	Mean	SD
Developmental Readers (G1)	9.39	2.77
Developmental Readers (G2)	8.84	2.93
Regular Education Students	17.52*	4.03

*p<.001; based on ANOVA

Table 2

Means and Standard Deviations for Both Groups

on The Comprehension Test

Text Format	Text Explicit(N=12)		Text Implicit(N=14)		Total(N=26)	
	M	SD	M	SD	M	SD
Connected	8.50	.83	9.57*	1.69	18.07*	2.55
Disconnected	7.96	.88	4.85	1.01	12.81	1.97

*p<.01; based on ANOVA.

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